REMARKS

Status of Claims

Claims 114-29 remain presented for examination.

Examiner's Response to Arguments

In response to Applicants Arguments filed 7/25/2008, the Examiner takes the position:

"Re claims 14, 24, and 27, the Applicant contends that the prior art cited fails to teach or suggest performing a "plausibility" check on incoming sensed images. However, the Examiner respectfully disagrees. Yasui discloses image comparison (Yasui: paragraph [0036]) used for calculating the distance between the vehicle and the edge of a 3D object detected (Yasui: paragraph [0038]), wherein edge data may be emphasized on a resultant display (Yasui: paragraph [0054]) in order to alert the driver of the plausibility of the vehicle colliding with the 3D object (Yasui: paragraph [0038]).

Re claims 14, 24, and 27, the Applicant also contends that the prior art cited fails to teach or suggest alerting the driver of an implausible deviation as a result of performing a plausibility check. However, the Examiner respectfully disagrees. Yasui discloses displaying vehicle proximity information on a display in order to alert the driver of the plausibility of the vehicle colliding with the 3D object (Yasui: paragraph [0038])."

In response, Applicants thank the Examiner for his careful attention to each claim of the present application. However, Applicants respectfully submit that the Examiner is using "plausibility" to mean "probability" – which is an interpretation inconsistent with the art-accepted meaning of this term as defined in the present specification. Yasui determines whether there is a possibility of a collision, but does not carry out a second independent verification of data as to whether the first determination of the possibility of collision should be trusted.

A "plausibility check" is a "reality check" – it involves comparing the data analysis or data set provided by a first sensor(s) against the independent data analysis or data set provided by

a second sensor(s). If both analysis or sets of data agree, then the plausibility of the conclusion derived from the first data set has been confirmed by the second data analysis independently reaching the same conclusion. If the data check does not confirm the conclusion derived from the first data set, then the first data set is not to be trusted, i.e., is not plausible.

As described in paragraph [0009] of the specification as filed: "Since vehicle operating parameters are taken into consideration, in a particularly preferred embodiment the image information processed with the vehicle environment unit can be subjected to a plausibility check. In the framework of this plausibility check, impermissible deviations between [(a)] the most recently detected image and [(b)] the image information stored in the intermediate memory are taken into consideration. For determining impermissible deviations, here the vehicle operating parameters are compared, in particular, with the detected image information or the image parameters of the image information. On the basis of a functionality test carried out by the plausibility check, it is now possible to inform the operator regarding the functionality of the vehicle environment unit."

The term "plausibility check" has an art established, well recognized meaning. See US 6,490,511 (Ford) claiming a powertrain control module comprising an independent plausibility check; "The IPC 64 is a safety feature to independently compare desired and actual torque values via a different calculation path."

See also US 6,496,763 (BMW) claiming a system including means for evaluating plausibility (trustworthiness) of a rollover signal, to thereby prevent a faulty triggering of the safety system: "This and other objects and advantages are achieved by the rollover detection system according to the present invention, in which information of rotational wheel speed sensors is also analyzed and used for examining the plausibility of a rollover signal....As the result, this information can be utilized to evaluate the plausibility of the rollover signals, and faulty triggering of a safety system can be prevented. ... In order to detect a defective microprocessor as a fault source, it is also advantageous to provide for all rollover sensors or for each rollover sensor a separate analyzing unit for analyzing the respective rollover signal, and to

then connect this analyzing unit with the control unit. As a result, the plausibility information is obtained in a separate component (specifically the control unit) which is independent of the rollover sensor system, and thus of the sensor itself, and of the analyzing unit. An error in the arithmetic-logic unit of the microprocessor itself can therefore be detected and does not lead to a faulty triggering."

Finally, see US 6,980,097 (Daimler) claiming a method and device activating a vehicle-occupant protection device after occurrence of a positive plausibility-confirmation check. "These and other objects and advantages are achieved by the method and apparatus according to the present invention, which uses simple sensors to generate what is referred to as a "time window"; i.e., a time range for a triggering request, in which the plausibility of a triggering request is confirmed after a threshold value is exceeded. Thereafter, if appropriate, activation of the vehicle-occupant protection device or devices takes place. ...The plausibility-confirmation signal according to the described preferred embodiment is an acceleration signal that is above a fixed, very low acceleration threshold. Alternatively, a signal which is equivalent thereto or is derived therefrom, and which corresponds in terms of its sign to the impact direction determined by the proximity sensors 1A, 1B, 2A, 2B, i.e., is in fact plausible."

Turning to Yasui (= US 6,483,429), the Examiner cites to following two paragraphs

"[0036] Next, the CPU 24 calculates the distance in each of the images for the identical edges detected in step S132 (step S133). The distance is from a center position of each of the images to each of those edges, and is indicated by coordinates, for example. ...

[0038] Conventional technologies so far disclosed as relevant to vehicles, such as automobiles, include detecting any obstacle around a vehicle, for example. If any obstacle is detected, and if a collision with the obstacle is determined as being highly possible, a driver of the vehicle is warned by alarm, advised of a distance to the obstacle, or according to the distance, the vehicle is automatically braked to stop. As an example of such detection means, there is a distance detection system utilizing an image recognition technology, such as disclosed in

Japanese Patent Laid-Open No. 5-114099 (93-114099). Utilized in this system is an image picked up by a camera mounted in a vehicle."

However, the images being compared are the images from Fig. 5A and Fig. 5B – two images of the same object derived by the same sensor. As explained in Yasui paragraph [0058] "As is known from the above, the parking assistance system of the embodiment is fixedly provided with a single image pick-up, which picks up two images at different times and locations. The parking assistance system thus carries out triangulation with respect to a 3D object. Accordingly, the parking assistance system has no more need to fixedly attach several image pick-ups with considerable accuracy, especially in angle, direction, interval, and the like, and thus one image pick-up will do. Further, as it previously calculates the transit distance or heading direction of the vehicle, the parking assistance system thus can estimate the position where the 3D object is displayed in the image. In this manner, the amount of calculation used to search for any identical 3D objects in two images can be reduced, and hardware structure is simplified. Still further, in order to display object data for the driver, the parking assistance system converts an image showing an area around the vehicle into a view from the above without causing the image to be askew. Also in thus obtained image, the 3D object is located at a precise distance, allowing the driver to perceive the actual distance from the vehicle to the 3D object. Needless to say, the parking assistance system can be effectively utilized by mounting the image pick-up at the rear part of a large-sized vehicle, which has many blind spots."

Nowhere does Yasui teach the carrying out of a second independent analysis to confirm the first conclusion of possibility of collision.

Accordingly Yasui does not anticipate or even relate to the present invention.

Claim Rejections - 35 U.S.C. § 103

Claims 14, 16, 18, 19, 26, 27, and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Yasui et al. (EP 1094337 A2).

Re claim 14, Yasui discloses a vehicle environment surveillance unit (0) with a plausibility check and operator alert, including a video display (1) (Yasui: Fig. 1, element 30), at least one image sensor (3) for acquisition of environmental information (Yasui: Fig. 1, elements 40 and 50), a computer or processor (2) for processing the acquired environment information into image information and displaying the results on the video display (1) (Yasui: Fig. 1, element 20; paragraph [0026]), an intermediate memory (4) into which the image information is additionally recorded (Yasui: Fig. 2, elements 22, 23; paragraph [0026]), and comparison means for carrying out a plausibility check including an image processing algorithm (5) via which the most recently recorded image is compared with the image information stored in intermediate memory and evaluated for plausibility and triggering a modification of the displayed video image to alert the vehicle operator on detecting an implausible deviation between the most recently recorded image and the image information in the intermediate memory (Yasui: paragraph [0026], distance calculation; paragraph [0054] and Fig. 10B, the display may change according to the calculated distance, thereby warning a driver to the proximity of other cars while parking), wherein, during comparison of the most recently recorded image with the image information in memory, vehicle operating parameters (6) are additionally taken into consideration (Yasui: paragraph [0026], "The CPU 24 uses all of the digital image data, steering angle data, and the wheel rotation data so as to go through image processing following the program on the RAM 25.").

Applicants respectfully traverse.

As explained in Yasui paragraph [0058], the parking assistance system of the embodiment is fixedly provided with a single image pick-up, which picks up two images at different times and locations. The parking assistance system thus carries out triangulation with respect to a 3D object. There is no comparison of the results of the first triangulation with a second, independent sensor or data set to verify the plausibility of the conclusion arrived at by the first triangulation calculation.

According to the Examiner, re claim 16, the Yasui discloses that the operating parameter (6) is the vehicle speed (Yasui: Fig. 1 and paragraph [0024], the parking assistance system includes a wheel speed sensor 50; paragraph [0026], the CPU 24 uses wheel rotation data to go through the image processing procedure).

However, this wheel speed sensor is merely used to derive change in position data of the sensor as necessary for calculating distance by triangulation. There is no "reality check".

Re claim 18, according to the Examiner Yasui discloses that, in the case of an implausible deviation between the most recently recorded image and the image information in memory, the video image display (1) is automatically switched off (Yasui: page 5, lines 49-51).

The Examiner is misinterpreting Yasui. Yasui here teaches that if the vehicle is traveling at a high speed, it may be assumed that the operator is not intending to park, and if the operator is not intending to park, there is no need for the parking assist, thus, the parking assist is turned off. The operation of the parking assist is automatically ended. This has nothing to do with a "plausibility check".

Re claim 19, Yasui discloses that, for correction of the displayed video image, a new image is acquired and the newly acquired image replaces the most recently recorded image (Yasui: Fig. 3, images are continually updated when the driver keeps the system in an "on" condition).

This has nothing to do with a plausibility check.

Re claim 19, Yasui discloses that for correction of the displayed video image a new image is acquired and the newly acquired image replaces the most recently recorded image (Yasui: paragraph [0027], if the driver has not turned off the parking assistance system, the distance calculation and display procedure is repeated until the parking assistance system is turned off).

Again, this has nothing to do with a plausibility check.

Re claim 26, Yasui discloses that said vehicle environment surveillance system (0) is a system for locating a parking place (Yasui: paragraph [0012], parking assistance).

However, the "plausibility check" defined in the present independent claims is not disclosed in Yasui, thus the allowability of this dependent claim follows from it's dependency from the base claim.

Claim 27 recites the corresponding method for implementation within the system of claim 14, and, therefore, has been analyzed and rejected with respect to claim 14 above.

Claim 29 has been analyzed and rejected with respect to claim 26 above.

Claim Rejections - 35 USC § 103

Claim 15 (wherein the operating parameter (6) is a parameter which provides information regarding whether the vehicle is moving forwards or backwards or standing still) is rejected under 35 U.S.C. 103(a) as being unpatentable over Yasui et al. (EP 1094337 A2) in view of Sakiyama et al. (US 6411867 B1).

In response, Applicants point out that Yasui does not teach the "plausibility check" – the comparison of a second set of data against the conclusion derived from a first set of data to independently verify the trustworthiness of the first set of data. Since the essential feature of claim 14 is missing from the teachings of the primary reference, dependent claim 15 can not be said to be obvious in view of the secondary reference.

Claim 17 (in the case of an implausible deviation between the most recently recorded image and the image information in memory, an error message is displayed on the video display (1)) is rejected under 35 U.S.C. 103(a) as being unpatentable over Yasui et al. (EP 1094337 A2 in view of Ikeda (US 6734787 B2).

However, since neither reference teaches a plausibility check, the subject matter of the dependent claim is patentable by virtue of it's dependency from the allowable base claim.

Claims 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasui et al. (EP 1094337 A2) in view of Gunderson et al. (US 20060119473 A1).

Gunderson discloses a system of avoiding collisions, where an error message is displayed on the operator interface in the event of a catastrophic failure (Gunderson: paragraph [0084]).

Since both Yasui and Gunderson relate to monitoring the external environment of a vehicle with sensor devices, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the built-in-testing (BIT) of Gunderson with the parking assist system of Yasui in order to ensure the integrity of the data being processed by the system (Gunderson: paragraph [0084]). The combined system of Yasui and Gunderson has all of the features of claim 20.

Re claim 21, according to the Examiner Yasui discloses a majority of the features of claim 21, as discussed above in claim14, but does not specifically disclose that in the case that a re-initiation of the image display is no longer possible, the video image display (1) is automatically switched off. However, Gunderson discloses a system of avoiding collisions, wherein the system halts in the event of a catastrophic error (Gunderson: paragraph [0084]). Since both Yasui and Gunderson relate to monitoring the external environment of a vehicle with sensor devices, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the built-in-testing (BIT) of Gunderson with the parking assist system of Yasui in order to ensure the integrity of the data being processed by the system (Gunderson: paragraph [0084]).

In response, Applicants point out that Gunderson teach in paragraph [0084]that when the vehicle is in motion, the system will perform BIT on all detector modules by looking for road clutter signatures from each of the radar modules (i.e. forward-looking, side-looking, and rear-looking detectors). If the radar modules are working properly, they will always detect low level return signals from the road surface while the vehicle is moving and will transmit information pertaining to these signals back to the control module. If the sensor is defective, the system will continue to function, bypassing the defective sensor. If the BIT detects a catastrophic failure, an error message will be displayed on the operator interface and the system will halt. Thus, Gunderson is mearly checking to see whether the various sensors are "alive". There is no comparision of a conclusion derived from one data set from one set of sensors with another conclusion or data set to see whether the first conclusion is to be trusted. As described in

paragraph [0009] of the specification of the present application as filed: "Since vehicle operating parameters are taken into consideration, in a particularly preferred embodiment the image information processed with the vehicle environment unit can be subjected to a plausibility check. In the framework of this plausibility check, impermissible deviations between [(a)] the most recently detected image and [(b)] the image information stored in the intermediate memory are taken into consideration. For determining impermissible deviations, here the vehicle operating parameters are compared, in particular, with the detected image information or the image parameters of the image information. On the basis of a functionality test carried out by the plausibility check, it is now possible to inform the operator regarding the functionality of the vehiele environment unit."

Re claim 22, the Examiner takes the position that Yasui discloses a majority of the features of claim 22, as discussed above in claim 14, but does not specifically disclose that the vehicle operator is informed regarding an impermissible deviation between the most recently recorded image and the image information in memory by a means independently of the video image display (1), which independent means is in communication with the vehicle environment surveillance unit (0). However, Gunderson discloses a system of avoiding collisions, wherein the system may present a set of tones to the driver as an alert (Gunderson: paragraph [0076]).

In response, Applicants point out that incorporation of BIT testing will test sensors for a pulse, to provide assurances that various sensors are operational. This has nothing to do with comparison of two sets of logic or data to confirm the plausibility of a conclusion derived from a first set of data.

Re claim 23, the Examiner takes the position that Yasui discloses a majority of the features of claim 22, as discussed above in claim 14, but does not specifically disclose that an optical display means is used as the warning means (7) providing optical signals for informing the vehicle operator. However, Gunderson discloses an additional display may be used (Gunderson: paragraph [0067]).

In response, Applicants submit that, since neither reference teaches a plausibility check, the subject matter of the dependent claim is patentable by virtue of it's dependency from the allowable base claim.

Re claim 24, the Examiner takes the position that Yasui discloses a vehicle environment surveillance unit (0) with a plausibility check and operator alert, including a video display (1) (Yasui: Fig. 1, element 30), at least one image sensor (3) for acquisition of environmental information (Yasui: Fig. 1, elements 40 and 50), a computer or processor (2) for processing the acquired environment information into image information and displaying the results on the video display (1) (Yasui: Fig. 1, element 20; paragraph [0026]), an intermediate memory (4) into which the image information is additionally recorded (Yasui: Fig. 2, elements 22, 23; paragraph [0026]), and comparison means for carrying out a plausibility check including an image processing algorithm (5) via which the most recently recorded image is compared with the image information stored in intermediate memory and evaluated for plausibility and triggering a modification of the displayed video image to alert the vehicle operator on detecting an implausible deviation between the most recently recorded image and the image information in the intermediate memory (Yasui: paragraph [0026], distance calculation; paragraph [0054] and Fig. 10B, the display may change according to the calculated distance, thereby warning a driver to the proximity of other cars while parking), wherein, during comparison of the most recently recorded image with the image information in memory, vehicle operating parameters (6) are additionally taken into consideration (Yasui: paragraph [0026], "The CPU 24 uses all of the digital image data, steering angle data, and the wheel rotation data so as to go through image processing following the program on the RAM 25.").

Applicants have carefully studied Yasui and find therein no plausibility check as proposed by the Examiner as discussed in detail above.

According to the Examiner, Yasui does not specifically disclose that acoustic signals are provided to alert the vehicle operator upon detecting an implausible deviation between the most recently recorded image and the image information in the intermediate memory.

In response, Applicants submit that, since neither reference teaches a plausibility check, the subject matter of the dependent claim is patentable by virtue of it's dependency from the allowable base claim.

Claims 25 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasui et al. (EP 1094337 A2) in view of Shisgal et al. (US 5574426 A).

Re claim 25, Yasui discloses a majority of the features of claim 25, as discussed above in claim 14, but does not specifically disclose that the vehicle environment surveillance system (0) is a night vision system. However, Shisgal discloses optical infrared

In response, Applicants submit that, since neither reference teaches a plausibility check, the subject matter of the dependent claim is patentable by virtue of it's dependency from the allowable base claim.

Claim 28 has been analyzed and rejected with respect to claim 25 above.

Again, in the absence of teaching of a plausibility check, the references to do not teach or suggest the present invention. As described in paragraph [0009] of the specification as filed "the image information processed with the vehicle environment unit can be subjected to a plausibility check. In the framework of this plausibility check, impermissible deviations between [(a)] the most recently detected image and [(b)] the image information stored in the intermediate memory are taken into consideration. For determining impermissible deviations, here the vehicle operating parameters are compared, in particular, with the detected image information or the image parameters of the image information. On the basis of a functionality test carried out by the plausibility check, it is now possible to inform the operator regarding the functionality of the vehicle environment unit."

Accordingly, withdrawal of the rejections is respectfully requested.

The Commissioner is hereby authorized to charge any fees which may be required at any time during the prosecution of this application without specific authorization, or credit any overpayment, to Deposit Account Number 16-0877.

Favorable consideration and early issuance of the Notice of Allowance are respectfully

requested. **Should further issues remain prior to allowance, the Examiner is respectfully requested to contact the undersigned at the indicated telephone number.**

Respectfully submitted,

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